

(12) UK Patent Application (19) GB (11) 2 365 387 (13) A

(43) Date of A Publication 20.02.2002

(21) Application No 0109379.8

(22) Date of Filing 12.04.2001

(30) Priority Data

(31) 0019158

(32) 05.08.2000

(33) GB

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(51) INT CL⁷

B63B 35/32, E02B 15/00

(52) UK CL (Edition T)

B7A ACA A430C1

(56) Documents Cited

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(58) Field of Search

UK CL (Edition S) B7A AAAY A430C1

INT CL⁷ B63B 35/32, E02B 15/00

Online EPODOC JAPIO WPI

(54) Abstract Title

Water vessel with removable debris collection means

(57) A water vessel comprises a buoyancy support means 1 arranged to support a removable debris collection means (10, Fig 3) and/or a removable work platform (20, Fig 4). The vessel may be a catamaran formed from aluminium, galvanised steel, plastics or glass reinforced plastics with the debris collection means and work platform being dimensioned to locate between the hulls 2,3 of the catamaran. The debris collection means may be in the form of an aluminium mesh basket with a base (19, Fig 3) and four panels (12,13,14, Fig 3) extending upwards from the base, two being fixed and one being movable. In use the movable panel is moved to an open position to allow debris in the water to enter the collection means with the mesh panels acting as a strainer to retain the debris inside the collection means.

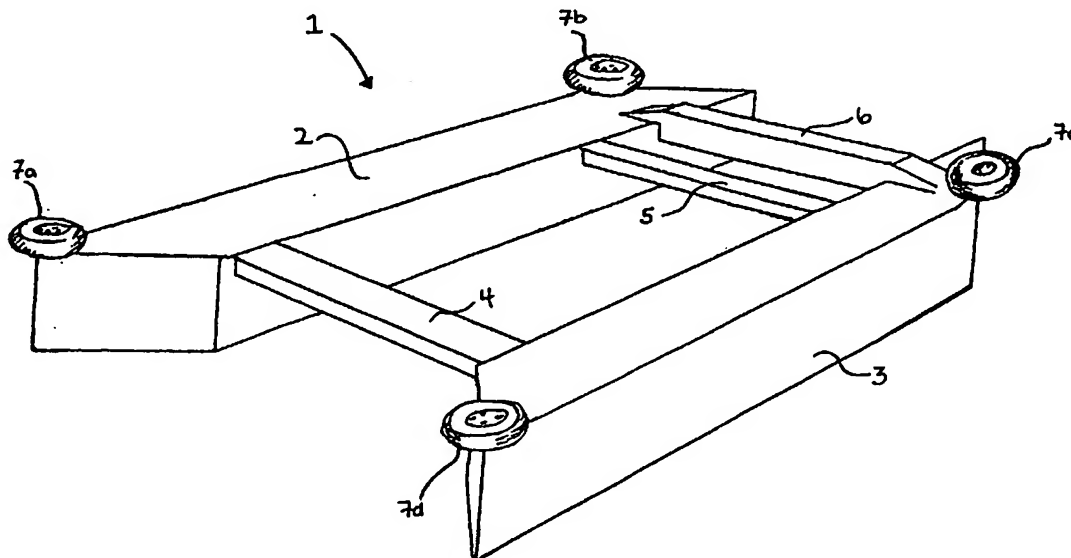


Figure 1

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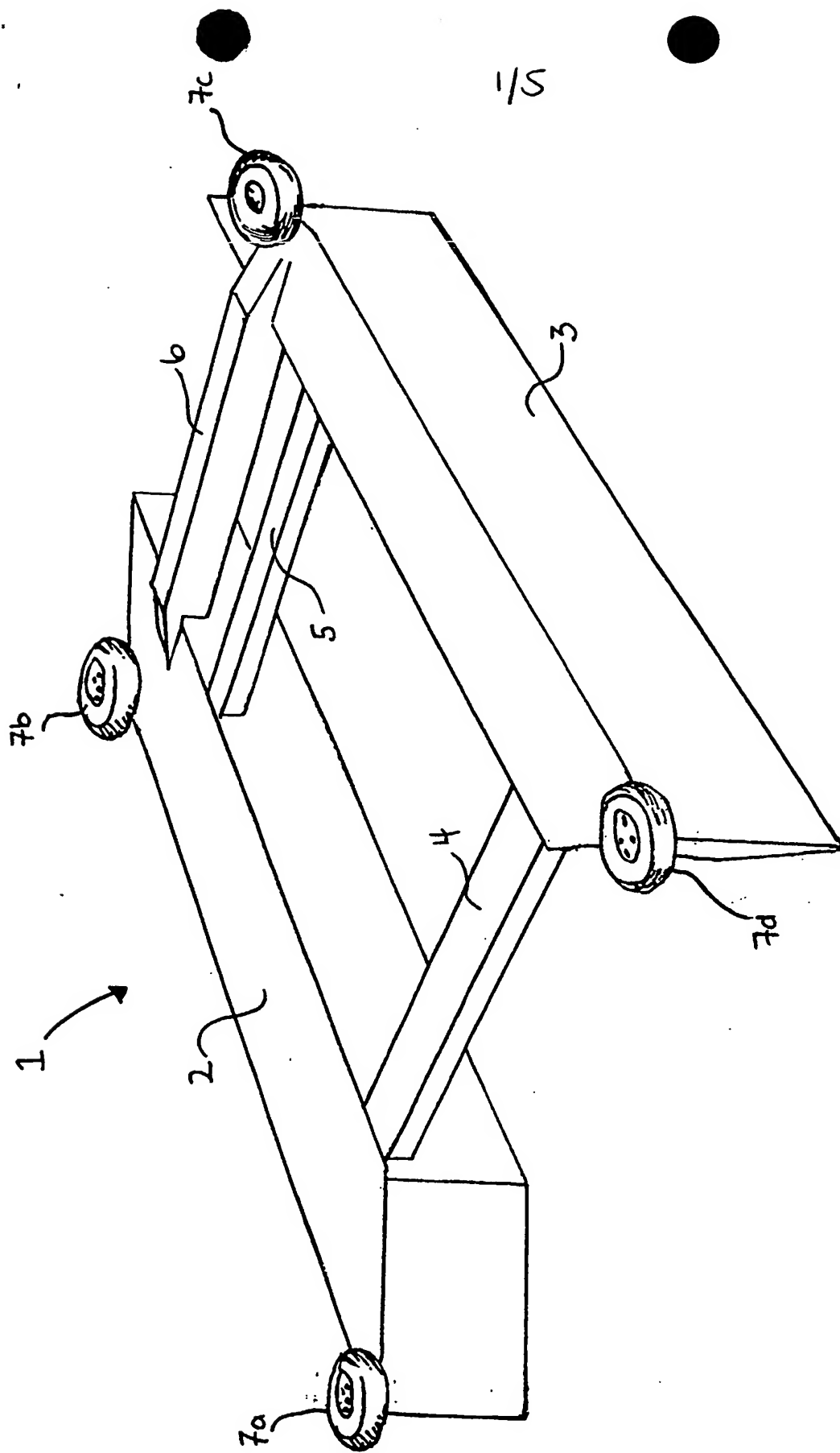


Figure 1

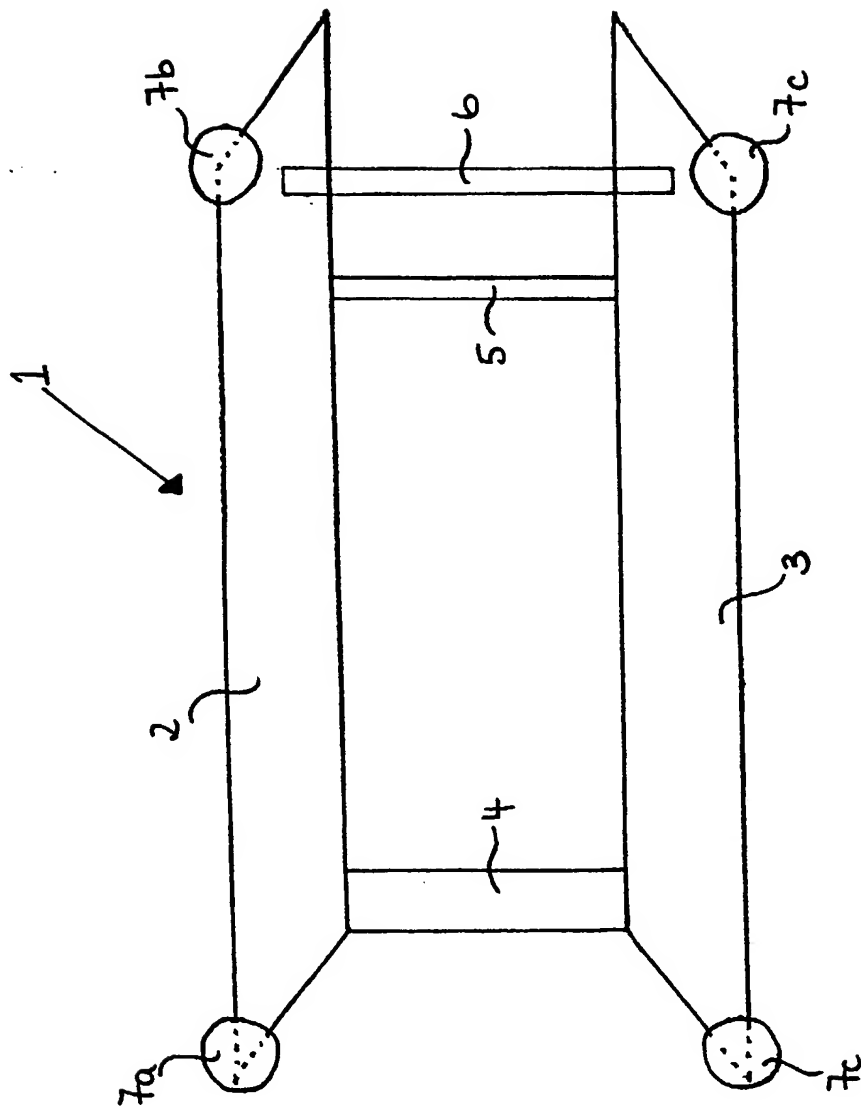


Figure 2

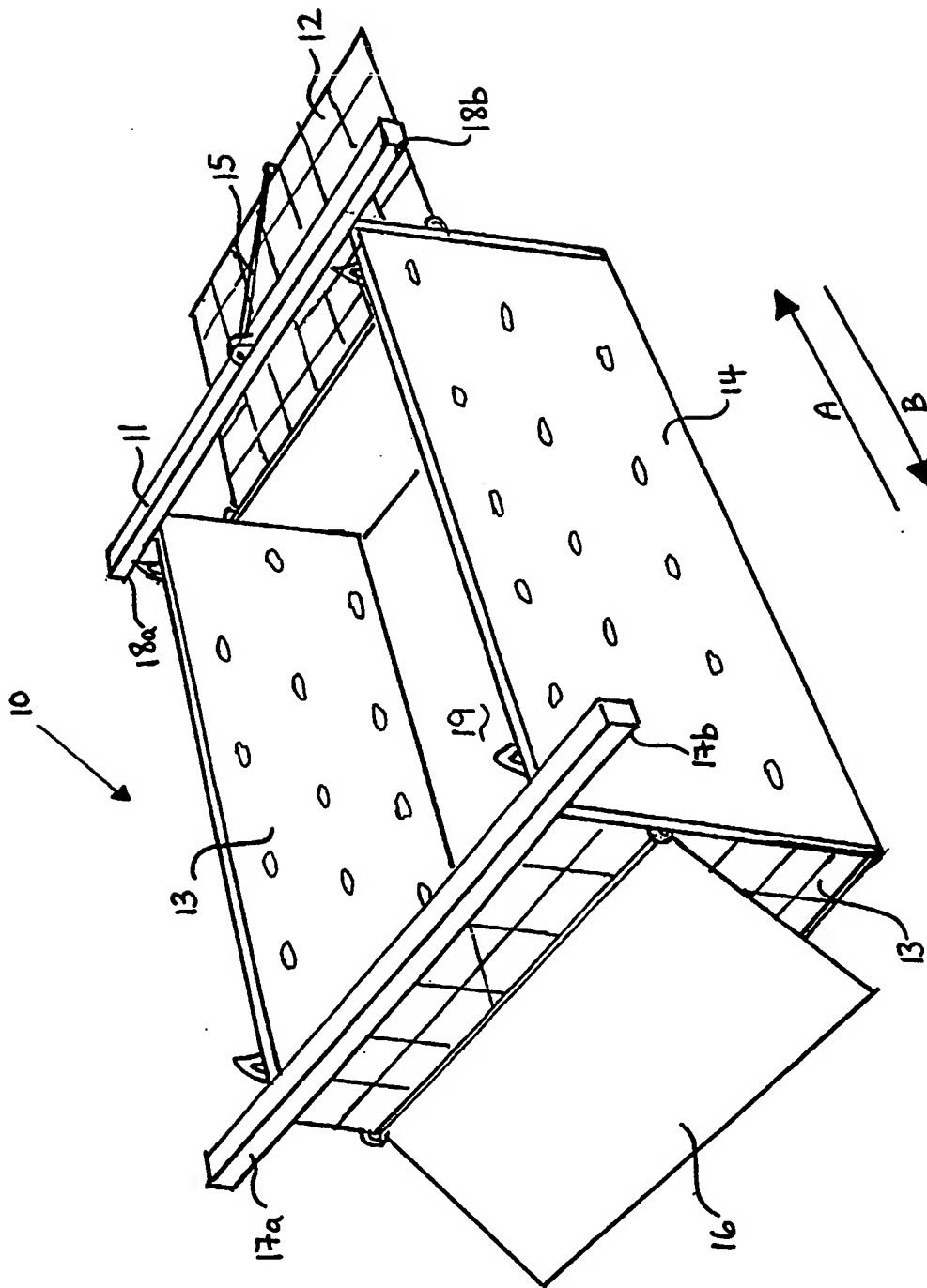


Figure 3

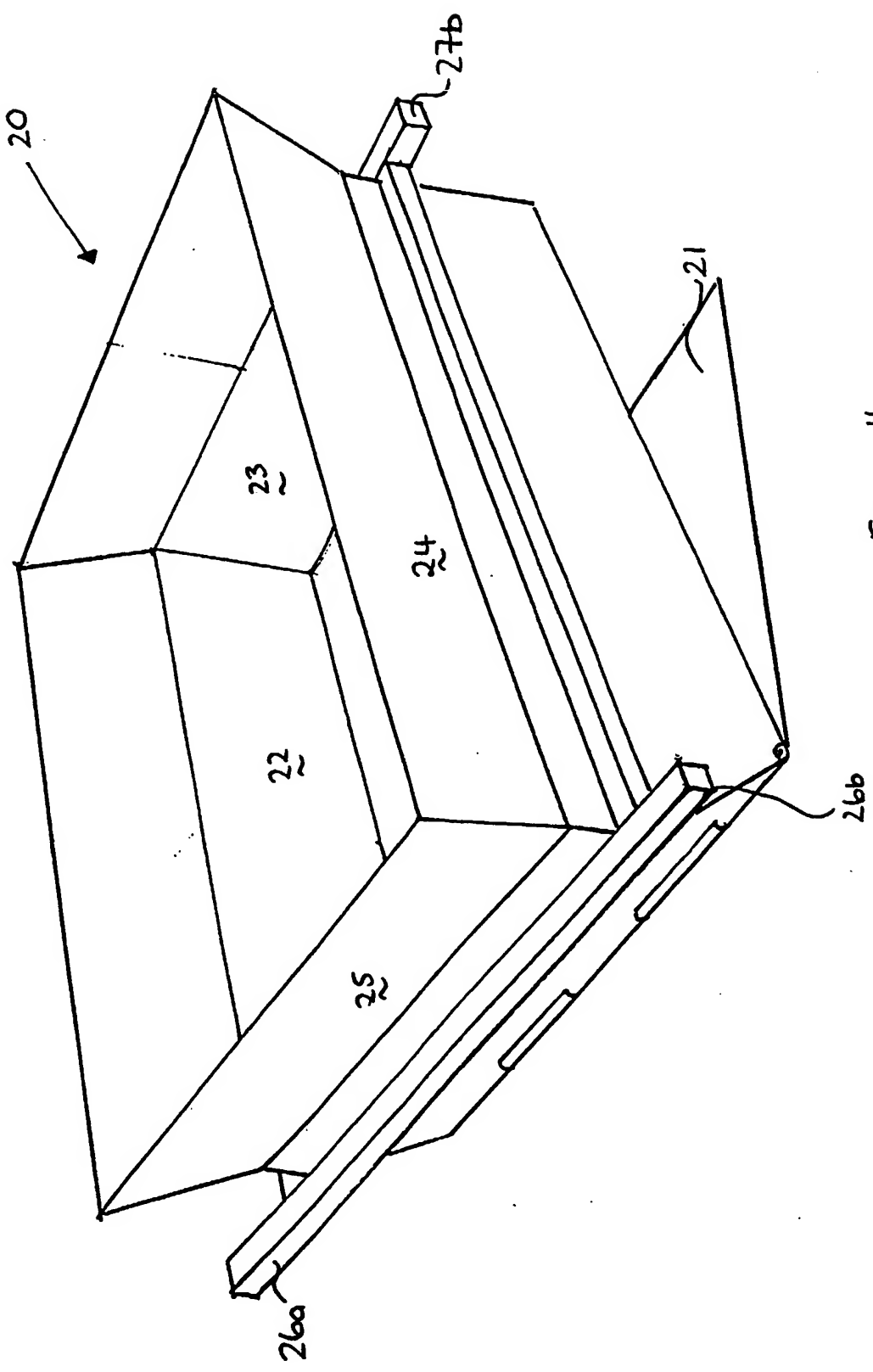


Figure 4

S/5

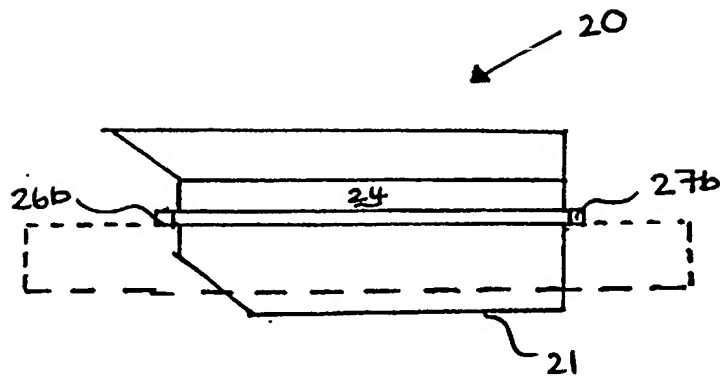


Figure 5

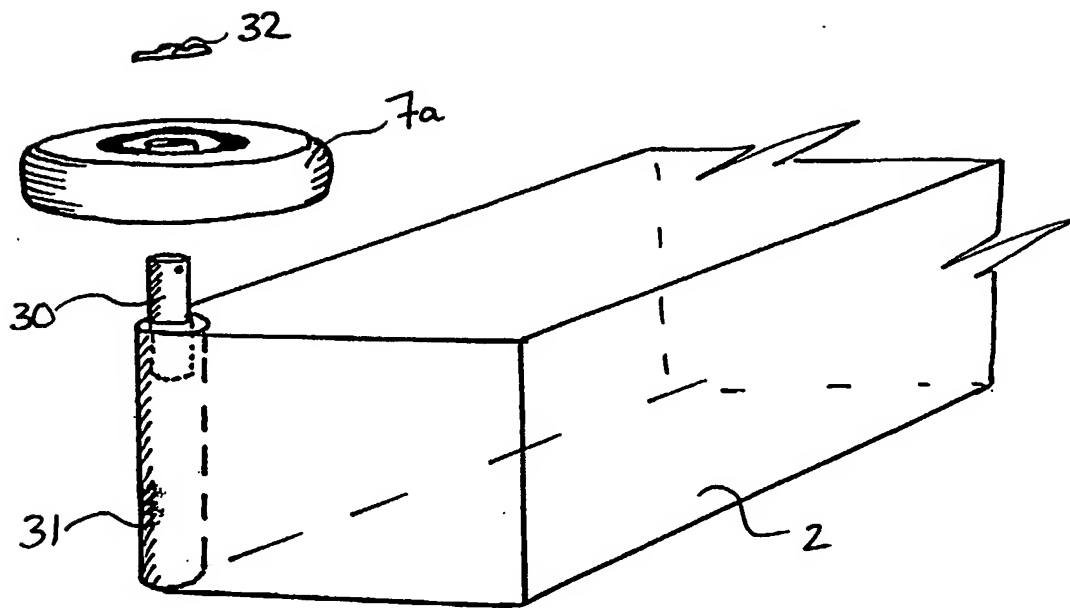


Figure 6

Water Vessel

The present invention is concerned with a water vessel. In particular a water vessel which is suitable for removing
5 debris from a body of water, such as a marina, harbour, canal or the like.

Waterways such as canals, marinas and harbours are becoming more and more popular as areas of leisure interest and
10 natural beauty. Cleanliness and environmental management are critical factors in the standards of services expected from such waterways. However, a major problem with such waterways is the increasing presence of wind blown debris, river debris, tidal flotsam and in certain circumstances,
15 animal carcass all of which typically float on the surface of the water. Therefore, the swift removal of debris is essential not only for aesthetic reasons but also to prevent debris fouling boats and mechanical equipment such as lock gates.

20

In order to remove such debris, personnel have been known to attempt to remove the debris through the use of nets and/or rakes. Such a method is not only labour intensive and costly but is also an unpleasant task for the personnel
25 involved.

30

It is therefore an aim of the present invention to alleviate at least some of the disadvantages highlighted above.

It is a further aim of the present invention to provide apparatus suitable for use in the removal of debris from a waterway.

- 5 It is yet a further aim of the present invention to provide apparatus suitable for use in the removal of debris from a waterway which does not include mechanical or hydraulic systems which may malfunction.
- 10 It is yet a further aim of the present invention to provide a method for the removal of debris from a waterway.

According to the present invention, there is provided a water vessel which includes a buoyancy support means
15 arranged to support a debris collection means and/or a work-pod.

Advantageously, the water vessel may be used for removal of debris from a waterway, for load carrying, as a working or
20 diving platform, for use when towing and also for emergency deployment.

According to a preferred embodiment of the present invention, the buoyancy support means includes a first hull
25 and a second hull, such as a catamaran type water vessel.

It is therefore preferred that the debris collection means and/or the work-pod are shaped and dimensioned to be positioned substantially between the first hull and the
30 second hull.

It is particularly preferred that the debris collection means and the work-pod are removable from the water vessel. Further preferably, the debris collection means and the work-pod are interchangeable with each other. It is therefore particularly desirable that the water vessel may be provided with a removable debris collection means and a removable work-pod.

Typically, the debris collection means and/or the work-pod have lifting points attached thereto to assist in removal from the vessel. The lifting points are typically hooks and/or loops.

The vessel may be of aluminium, galvanised steel, plastics or glass reinforced plastics. However, it is envisaged that the vessel may be constructed from any material which provides buoyancy for the vessel.

It is particularly preferred that the vessel is constructed from aluminium (such as marine grade aluminium) as this enables the vessel to be lightweight, have low maintenance costs, and ease of construction. The use of aluminium has the further advantage that it permits the vessel to be constructed in a number of different sizes to suit the specific needs of each waterway without the need for expensive moulds.

The buoyancy support means, the debris collection means and the work-pod may be of the same material (such as aluminium), however, it is envisaged that each component may be of a different material.

5

The vessel may be moved through a body of water by manual means (such as oars or paddles), by the use of wind power (for example using sails) or by motor means (which is particularly preferred). A preferred motor means includes
10 the type known as an outboard motor.

The debris collection means is preferably arranged to act as a strainer whereby debris collected in the debris collection means is retained therein.

15

The debris collection means is preferably in the form of a basket, box or the like. The basket, box or the like typically includes a base and a plurality of upstanding panels extending from the base.

20

The upstanding panels preferably include three substantially fixed panels. It is further preferred that the upstanding panels include three substantially fixed panels and one movable panel. The movable panel is
25 preferably movable between a closed position which substantially inhibits entry of debris into the box and an open position which substantially permits entry of debris into the box.

30

The movement of the movable panel is preferably controlled by control means, such as a lever (which is typically manually operated).

5 It is therefore preferred that the panels are of a mesh-like material, such as aluminium mesh. It is envisaged that the base may be of a mesh-like material and therefore be essentially the same as the panels, or the base may be a solid body, such as, for example an aluminium sheet
10 material.

The work-pod may be a (substantially flat) platform or the work-pod is typically of an open box configuration, which preferably includes a (preferably solid) base and four
15 (preferably solid) upstanding walls extending from the base.

Typically, the base is a controlled closable base which is movable between a closed position and an open position
20 which permits contents of the work-pod to be removed (typically under gravity) from the work-pod.

The work-pod may be of be of aluminium, galvanised steel, plastics or glass reinforced plastics. However, it is
25 envisaged that the work-pod may be constructed from any material which provides buoyancy.

Typically, the first hull and the second hull are substantially parallel. This feature has the advantage that the water vessel can be manoeuvred substantially adjacent the side of a marina or a canal.

5

According to a second aspect of the invention, the work-pod according to the first aspect of the invention may be used as a boat when it does not form part of the water vessel. Advantageously, a motor, such as an outboard motor, may be attached to the work-pod. However, it is also envisaged that the work-pod may be powered by the use of wind (for example using a sail) by manual means (for example using a paddle or an oar).

10

15 In a particularly preferred embodiment of the present invention, the debris collection means includes a solid plate aluminium base, two side panels (typically of foraminated aluminium) a first moveable panel of aluminium mesh and a second rear panel of aluminium mesh.

20

It is particularly preferred that the debris collection means further includes a moveable gate (typically of plate aluminium), arranged to be moveable between an open position to a closed position which substantially blocks the rear mesh-like panel. This feature has the advantage of deflecting propellor wash when the engine is in reverse gear, so as to prevent debris being washed back out of the debris collection means.

25

Preferably the vessel further includes fender means (such as tyres or the like) arranged about the periphery of the vessel. Advantageously, the fender means substantially prevents the vessel from being damaged by the walls of a marina, canal or indeed a further vessel in the waterway. A preferred fender means includes a plurality of wheels.

Wheels have the added advantage of assisting movement of the vessel when the vessel is adjacent the walls of the marina, canal or the like.

According to yet a further embodiment of the present invention, it is envisaged that a plurality of water vessels according to the first aspect of the invention are connected together, preferably in side by side configuration.

According to a further aspect of the present invention, there is provided a method of removing debris from a waterway, which method includes:

- providing a water vessel according to the first aspect of the present invention;
- manoeuvring the water vessel substantially in the general direction of the debris; and
- trapping the debris in the debris collection means.

Typically, the method further includes a step whereby the debris collection means is removed from the water vessel, for example by use of a hoist or crane, or the like. The debris is preferably subsequently removed from the debris

collection means, typically into a debris collection vessel, such as a skip.

5 The present invention will now be described by way of example only, with reference to the accompanying drawings, wherein:

10 Figure 1 represents a buoyancy support means for use in a water vessel according to the present invention;

Figure 2 represents a plan view of the buoyancy support means shown in Figure 1;

15 Figure 3 represents a debris collection device for use in a vessel according to the present invention;

Figure 4 represents a work-pod for use in a vessel according to the present invention;

20 Figure 5 represents a side view of the work-pod shown in Figure 4;

25 Figure 6 represents an exploded view of a fender for use on the water vessel according to the present invention.

Referring to Figures 1 and 2, the buoyancy support means is generally identified by the numeral 1. The first hull 2 (which is constructed from marine grade aluminium) is
30 connected to the second hull 3 (which is also constructed

from marine grade aluminium) by aluminium bridging panels 4, 5 and 6.

Wheels 7a and 7b, are arranged on first hull 2 and wheels 7c and 7d on the second hull 3. The wheels 7a, 7b, 7c, and 7d act as fenders for the water vessel.

Referring to Figure 3, where like numerals have been used to identify like parts shown in Figures 1 and 2, the debris collection basket generally indicated by the numeral 10, comprises a galvanised steel frame 11, a solid aluminium base 19, two perforated aluminium side panels 13 and 14, front movable aluminium mesh gate 12 and rear aluminium mesh panel 13. Movement of the front movable gate 12 is controlled by lever 5 (which is attached to the frame 11 and gate 12). A hinged flap 16 is arranged to cover rear panel 13 of the debris collecting basket. Therefore when the vessel (not shown in Figure 3) is manoeuvred in a backwards direction (indicated by arrow B) ie reverse thrust on the outboard motor (not shown), flap 16 lies flush against rear panel 13; the panel has the advantage of preventing the debris collected in the basket being washed back out of the basket when the vessel is manoeuvred in a backwards direction (indicated by arrow B). The frame includes shoulders 17a, 17b, 18a and 18b, which when the basket is in the vessel, rest on hulls 2 and 3 (shown in Figures 1 and 2).

Referring to Figures 4 and 5, where like numerals have been used to identify like parts shown in Figures 1 to 3. The work-pod is generally indicated by the numeral 20. The work-pod 20 includes a hinged aluminium trap door base 21 and four aluminium wall panels 22, 23, 24 and 25. The work-pod further includes shoulders 26a, 26b and 27b which are arranged to rest on hulls 2 and 3 when the work-pod forms part of the vessel.

- 10 Referring to Figure 6, where like numerals have been used to identify like parts shown in Figures 1 to 5. The wheel 7a is attached to hull 2 by means of pipe 3 which is inserted in tube 31. The wheel 7a is secured in place by cap 32.

Claims:

1. A water vessel which includes a buoyancy support means arranged to support a debris collection means and/or a work-pod.
5
2. A water vessel according to claim 1, wherein the buoyancy support means includes a first hull and a second hull, such as a catamaran type water vessel.
10
3. A water vessel according to claim 2, wherein the debris collection means and/or the work-pod are shaped and dimensioned to be positioned substantially between the first hull and the second hull.
15
4. A water vessel according to any preceding claim, wherein the debris collection means and the work-pod are removable from the water vessel.
- 20 5. A water vessel according to any preceding claim, wherein the debris collection means and the work-pod are interchangeable with each other.
- 25 6. A water vessel according to any preceding claim which is of aluminium, galvanised steel, plastics and/or glass reinforced plastics.

7. A water vessel according to any preceding claim, wherein the buoyancy support means, the debris collection means and the work pod are substantially of the same material.

5

8. A water vessel according to any preceding claim which further includes movement means such as manual movement means (such as oars or paddles), wind power movement means (such as a sail) or motor movement means (such as an outboard motor).

10

9. A water vessel according to any preceding claim wherein the debris collection means is arranged to act as a strainer.

15

10. A water vessel according to any preceding claim wherein the debris collection means is preferably in the form of a basket, box or the like.

20

11. A water vessel according to claim 10, wherein the basket, box or the like typically includes a base and a plurality of upstanding panels extending from the base.

25

12. A water vessel according to claim 11, wherein the upstanding panels preferably include three substantially fixed panels.

13. A water vessel according to claim 12, wherein the upstanding panels include three substantially fixed panels and one movable panel.
- 5 14. A water vessel according to claim 13, wherein the movable panel is movable between a closed position which substantially inhibits entry of debris into the box and an open position which substantially permits entry of debris into the box.
- 10 15. A water vessel according to any of claims 12 to 14, wherein the panels are of a mesh-like material, such as aluminium mesh.
- 15 16. A water vessel according to any preceding claim, wherein the work-pod is a platform, which is preferably substantially flat.
17. A water vessel according to any preceding claim,
20 wherein the work-pod is of an open box configuration, which preferably includes a (preferably solid) base and four (preferably solid) upstanding walls extending from the base.
- 25 18. A water vessel according to claim 17, wherein the base is a controlled closable base which is movable between a closed position and an open position which permits contents of the work-pod to be removed (typically under gravity) from the work-pod.

19. A water vessel according to any preceding claim,
wherein the work pod is of aluminium, galvanised
steel, plastics or glass reinforced plastics.
- 5 20. A water vessel according to any of claims 2 to 19,
wherein the first hull and the second hull are
substantially parallel.
- 10 21. A water vessel according to any preceding claim
wherein the debris collection means includes a solid
plate aluminium base, two side panels (typically of
foraminated aluminium) a first moveable panel of
aluminium mesh and a second rear panel of aluminium
15 mesh.
22. A water vessel according to any preceding claim,
wherein the debris collection means further includes
a moveable flap arranged to be moveable between a
20 closed position and an open position which
substantially impedes the rear mesh-like panel.
23. A water vessel according to any preceding claim which
further includes fender means (such as tyres or the
25 like) arranged about the periphery of the vessel.
24. A water craft which includes two or more water vessels
according to any of claims 1 to 23.

25. A method of removing debris from a waterway, which method includes:
providing a water vessel according to any of claims 1 to 24;
5 manoeuvring the water vessel substantially in the general direction of the debris; and
trapping the debris in the debris collection means.
26. A method according to claim 25 which further includes
10 a step whereby the debris collection means is removed from the water vessel, (preferably by use of a hoist or crane, or the like).
27. Apparatus substantially as described herein with
15 reference to the accompanying figures.



INVESTOR IN PEOPLE

Application No: GB 0109379.8
Claims searched: 1 to 27

Examiner: Richard Collins
Date of search: 10 July 2001

Patents Act 1977 Search Report under Section 17

Databases searched:

UK Patent Office collections, including GB, EP, WO & US patent specifications, in:

UK Cl (Ed.S): B7A AAAY, A430C1.

Int Cl (Ed.7): B63B 35/32; E02B 15/00.

Other: Online EPODOC, JAPIO, WPI.

Documents considered to be relevant:

Category	Identity of document and relevant passage	Relevant to claims
X	GB 2287000 A (WAH) see figure 1 and related description.	1-12,15,20,25,26
X	GB 1516790 A (KAISHA) see figure 1 and related description.	1-3,6-12,15,20,25
X	GB 1503459 A (KAISHA) see figures 3 and 4.	1-3,6-12,15,20,25
X	US 4248033 A (BRYANT) see figure 1 and related description.	1,4,6-15,25,26
X	US 3730119 A (BUDRIS) see figure 1.	1-4,6-14,20,25,26
X	FR 2686567 A (CARPENTIER) figures and abstract.	1-4,6,7,9-11,15,20,25,26

X	Document indicating lack of novelty or inventive step	A	Document indicating technological background and/or state of the art.
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